

Total Coliform Rule Monitoring and Reporting Requirements for Public Water Systems

All public water systems must comply with the monitoring requirements for total coliform bacteria. Coliform are a diverse collection of bacteria with a similar sanitary significance. There are over 30 species of coliforms including strains of Escherichia coli. Coliforms are naturally present in the environment and are used as an indicator of potential drinking water problems. Coliforms are not associated with clean, safe drinking water. Absence of total coliform bacteria in drinking water provides some assurance of bacteriological safety. Reliable analysis for coliform bacteria can be completed in about twenty four hours. The presence of E. coli or fecal coliform in samples may represent an acute risk to the health of consumers. Coliform sample containers must be obtained from and must be analyzed by certified drinking water laboratories. Samples must be collected at regular time intervals throughout the month. All public water systems are advised to sample early each month or calendar quarter to avoid missing a sampling period or to avoid sample invalidation actions. **Monthly** means during a specific calendar month and **quarterly** means during a specific calendar quarter.

Community public water systems must submit samples for coliform analysis on a calendar **monthly** frequency. The number of samples required on a monthly basis is dependent on the population that the system serves. The number of monthly samples is shown on the following community water system table. **Non-community** water systems, both transient and non-transient, that distribute groundwater must monitor for coliform bacteria at a rate of no less than one sample per calendar quarter. When non-community systems regularly serve 1,000 persons per month or more, or distribute surface water, monthly monitoring like a community water system is required. The number of required coliform samples is indicated in the community water system table that follows.

Total Coliform Monitoring

Community Water Systems

Population Served	Minimum Number of Samples Per Month
25 to 1,000	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5

4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480
Source 40 CFR 141.21 (a) (2)	

Operators of public water systems are required to prepare a [written coliform sample siting plan](#) (40 CFR, Part 141.21 (a)), that identifies sample sites representative of water

throughout the distribution system. The plan must be submitted to the Bureau of Safe Drinking Water or the appropriate district health department for review and approval. The plan may be complex or simple depending on the size of the water system but must indicate the locations (sites) where routine samples and repeat samples are collected within the water distribution system. The typical site plan is a schematic or map view of the system and a corresponding list of addresses or locations in the distribution system. The sites are located on the map. Routine compliance sites are selected to represent normal conditions in the distribution system. Repeat sample sites are selected within five service connections upstream and downstream of routine sample sites. Repeat sites will be sampled if a routine sample(s) indicates the presence of total coliform, E. coli or fecal coliform bacteria. Modification of a sample site plan must be approved by the Bureau or appropriate district health department.

Community and non-community systems that are required to collect one coliform sample during a month or quarter must submit four repeat samples when a routine monthly or quarterly sample indicates the presence of total coliform. The repeats must be collected within 24 hours of notice from the laboratory or regulatory authority. The next month, after the original coliform present sample, five routine samples must be collected. If all of the repeat samples and the following monthly samples indicate the absence of total coliform, E. coli or fecal coliform, the sampling requirements revert to the normal number of samples and frequency. Larger systems that are required to collect two or more routine monthly samples must collect three repeat samples when coliform is present. These systems are required to submit five or more samples the month following a present sample and resume normal monthly sampling provided coliform samples do not indicate the presence of total coliform, E. coli or fecal coliform bacteria. The results of all coliform samples (and all other compliance samples) must be submitted to the Bureau or appropriate district health department by the 10th day of the month after collection.

Operators collecting coliform samples for water systems that use disinfectants must measure disinfectant residual levels for compliance with 40 CFR, Part 141.64, at the same time and location where routine monthly or quarterly coliform samples are collected. The residual level may be recorded in a log book for future [reporting](#) on the appropriate reporting form or recorded on the coliform laboratory sample submission form if approved by the Bureau or district health department.

It is very important that all samples are properly identified after collection and that sample forms are properly identified with the following information before providing them to the laboratory, Bureau or district health department: Name of the public water system, Public Water System ID#, date of sample collection, location where the sample was collected, type of sample collected, for example a routine sample or repeat sample(s), name of the person who collected the sample and the disinfectant residual level at the sample location if a disinfectant is added.

When coliform samples indicate the presence of fecal coliform or E. coli, the Bureau of Safe Drinking Water or district health department may issue a boil water order or an advisory boil

water order. An appropriate copy of the order or advisory must be provided promptly to the customers. These orders/advisories are an effort to avoid a potential waterborne disease occurrence. They may affect a portion of the system or the entire public water system. When boiling of the water at a system is not practical, provision of safe bottled water may be required. The following exact language concerning the presence of total coliform, E. coli or fecal coliform must be included in all public notices provided to customers whenever maximum contaminant level violations of the Total Coliform Rule occur. A violation of the total coliform rule as defined in 40 CFR, Part 141.63 is:

(a) "The MCL is based on the presence or absence of total coliforms in a sample, rather than coliform density.

(1) For a system which collects at least 40 samples a month, if no more than 5.0 percent of the samples collected during a month are total coliform-positive, the system is in compliance with the MCL for total coliforms.

(2) For a system which collects fewer than 40 samples a month, if no more than one sample collected during a month is total coliform-positive, the system is in compliance with the MCL for total coliforms.

(b) Any fecal coliform-positive repeat sample or E. coli-positive repeat sample, or any total coliform repeat sample following a fecal coliform-positive or E. coli-positive routine sample constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements in subpart Q, this is a violation that may pose an acute risk to health." Subpart Q refers to 40 CFR, Sections 141.201 through 141.210.

The mandatory language to be included in the public notices required in subpart Q is:

When the maximum contaminant level for total coliform is violated:

"Coliform are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems."

When the acute maximum contaminant level is violated:

Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches and other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems."

Public notification is required for all violations of the Total Coliform Rule, including failure to collect all routine and repeat samples.